(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property **Organization**

International Bureau



(43) International Publication Date 3 June 2004 (03.06.2004)

PCT

(10) International Publication Number WO 2004/047487 A1

(51) International Patent Classification7:

H04R 7/14

(21) International Application Number:

PCT/IB2003/004924

- (22) International Filing Date: 31 October 2003 (31.10.2003)
- (25) Filing Language:

English

(26) Publication Language:

English

EP

(30) Priority Data: 02102615.8

21 November 2002 (21.11.2002)

- (71) Applicant (for all designated States except US): KONIN-KLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): FRASL, Ewald [AT/AT]; Triester Strasse 64, A-1101 Vienna (AT).
- (74) Agent: RÖGGLA, Harald; Philips Intellectual Property & Standards, Triester Strasse 64, A-1101 Vienna (AT).

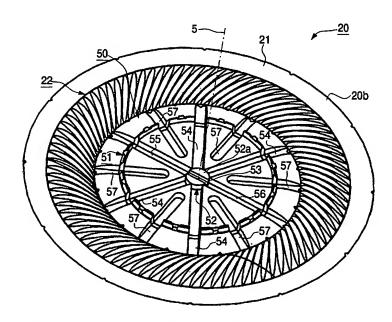
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ELECTROACOUSTIC TRANSDUCER COMPRISING A MEMBRANE WITH A MIDDLE AREA COMPRISING STIFFENING GROOVES



(57) Abstract: A membrane (20) has a membrane axis (5) and a middle area (50), a central cup-shaped depression (52) being provided around said membrane axis (5), which depression (52) preferably has a connecting channel (53), wherein the middle area (50) comprises groups of stiffening grooves (54, 55, 56, 57) which extend parallel to radial directions and of which a first group of long stiffening grooves (54, 55, 56) extends up to the depression (52), said connecting channel (53) issuing into two of the long stiffening grooves (55, 56), thus interconnecting these two long stiffening grooves (55, 56).

INTERNATIONAL SEARCH REPORT

ional Application No

	<u>. </u>	. Poi, IB 03	3/04924
A. CLASSII IPC 7	FICATION OF SUBJECT MATTER H04R7/14		
According to	o International Patent Classification (IPC) or to both national classifica	ation and IPC	
B. FIELDS	SEARCHED		
Minimum do IPC 7	cumentation searched (classification system followed by classification H04R	on symbols)	
Documentat	ion searched other than minimum documentation to the extent that s	uch documents are included in the fields	searched
Electronic da	ata base consulted during the international search (name of data ba	se and, where practical, search terms use	d)
EPO-In	ternal, PAJ		
C. DOCUME	ENTS CONSIDERED TO BE RELEVANT	•	
Category °	Citation of document, with indication, where appropriate, of the rel	evant passages	Relevant to claim No.
Х	WO 01/56330 A (KONINKL PHILIPS ELNV) 2 August 2001 (2001-08-02) page 3, line 2 -page 5, line 10; 1-4	1,4-9,11	
Α .	PATENT ABSTRACTS OF JAPAN vol. 010, no. 213 (E-422), 25 July 1986 (1986-07-25) & JP 61 050494 A (MATSUSHITA ELEC CO LTD), 12 March 1986 (1986-03-1 abstract	5	
А	DE 835 757 C (KLANGFILM GMBH) 3 April 1952 (1952-04-03) the whole document		1,11
	-	-/	
		•	
χ Furth	ner documents are listed in the continuation of box C.	χ Patent family members are listed	in annex.
° Special ca	tegories of clted documents:	"T" later document published after the in	ternational filing date
	ent defining the general state of the art which is not lered to be of particular relevance	or priority date and not in conflict wit cited to understand the principle or t invention	
"E" earlier decument but published on or after the International		"X" document of particular relevance; the	
'L' docume	int which may throw doubts on priority claim(s) or is cited to establish the publication date of another	cannot be considered novel or canninvolve an inventive step when the c	locument is taken alone
citation	n or other special reason (as specified) ent referring to an oral disclosure, use, exhibition or	"Y" document of particular relevance; the cannot be considered to involve an i	nventive step when the
other r	means	document is combined with one or n ments, such combination being obvi in the art.	
"P" docume	ent published prior to the international filing date but nan the priority date claimed	*&* document member of the same pater	it family
Date of the	actual completion of the international search	Date of mailing of the International se	earch report
2	8 April 2004	07/05/2004	
Name and n	nailing address of the ISA	Authorized officer	
	European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nt, Fax: (+31-70) 340-3016	Nieuwenhuis, P	

INTERNATIONAL SEARCH REPORT

i ional Application No Puni IB 03/04924

Category °	nuation) DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No.						
Jaiegury -	Onation of document, with indication, where appropriate, of the relevant passages	newani lo cialiff No.					
	GB 315 578 A (BRITISH THOMSON HOUSTON CO LTD;LEONARD BERTRAM AULT) 18 July 1929 (1929-07-18) the whole document 	. 1,11					

INTERNATIONAL SEARCH REPORT

mation on patent family members

Ional Application No Pc1/IB 03/04924

Patent document cited in search report	}	Publication date		Patent family member(s)	Publication date
WO 0156330	A	02-08-2001	CN WO EP JP US	1421114 T 0156330 A2 1228664 A2 2003521185 T 2001010725 A1	28-05-2003 02-08-2001 07-08-2002 08-07-2003 02-08-2001
JP 61050494	Α	12-03-1986	NONE	•	
DE 835757	С	03-04-1952	NONE		
GB 315578	Α	18-07-1929	NONE		